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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,819	04/19/2001	Akihiro Isomura	TNG-3-US	7427

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MCGINN & GIBB, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER

TAKAOKA, DEAN O

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,819

Applicant(s)

HWANG ET AL.

Examiner

Dean O Takaoka

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-21 and 23-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-14, 16, 21 and 23-25 is/are allowed.
- 6) ☒ Claim(s) 1-5, 17-20, 26 and 28-34 is/are rejected.
- 7) ☒ Claim(s) 27 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 18.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 7, 2002 by Amendment C (paper no. 13) has been entered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "dielectric member having a low dielectric constant" (newly added claim 36) **must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.**

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

By Amendment D (paper no. 17) dated October 10, 2002, newly added claim 36 recites "a dielectric member having a low dielectric constant, said dielectric member supporting said at least one dielectric resonator".

Newly added claim 36 is dependent from independent claim 28 and is drawn to Fig. 10, example 2 (page 18), where example 2, shown by Fig. 8 where the specification discloses that the "low dielectric constant" supports are not shown for Fig. 8. With

respect to Fig. 10, the mounts for supporting each resonator, similarly "are abbreviated in the present diagram as well" (page 19, lines 6-9).

The applicant is required to provide a copy of the drawings with proposed drawing changes marked in red ink as required by 37 CFR 1.121(d).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 18, 26, 28, 30, 33, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishitobi (Japan Patent No. 09-148810).

Claim 1:

Ishitobi shows a dielectric resonator comprising: a dielectric block having a generally rectangular parallelepiped shape (where Ishitobi shows a generally rectangular parallel shaped resonator Figs. 15 with respect to Figs. 1-10 et al.), where at least two edges of the dielectric block are chamfered (best shown in Fig. 4 where edges 12a, b and 13a, b are chamfered) in a manner to provide coupling of three resonant modes of the dielectric block (0016 – disclosed where coupling coefficients are K12 and K23, thus mode 1 is coupled to mode 2 and mode 2 is coupled to mode 3, hence providing coupling of three resonant modes of the dielectric block).

Claim 2:

A dielectric filter characterized in disposing at least one dielectric resonator in a cut-off waveguide (where Ishitobi discloses the three step band pass filter 0016 and shows a generic electrical filter schematic (Fig. 11) and filter response (Fig. 12), where the cut-off is shown in the attenuation and notch of the low frequency response of Fig. 12, similar to the high frequency attenuation of the band pass filtering shown in Fig. 6b of the current application).

Claim 18:

Characterized in installing another resonator further than the dielectric resonator in the cut-off wave guide (where the second resonator in the filter of Ishitobi would inherently be placed further, e.g. from either filter end, than the first dielectric resonator).

Claim 26:

Ishitobi shows a dielectric block having a generally parallelepiped shape (best shown in Fig. 1), where three resonant modes of the dielectric block are coupled (abstract and 0016 where coupling coefficients are K_{12} and K_{23} , thus mode 1 is coupled to mode 2 and mode 2 is coupled to mode 3, hence providing coupling of three resonant modes of the dielectric block discussed in the reasons for rejection of claim 1 above), where the dielectric resonator has a first plane formed by chamfering a single one of a ridge portion of the dielectric block (i.e. 12a – Fig. 4) and a second plane formed by chamfering a single one of a second ridge portion of the dielectric block (i.e. 13b – Fig. 4), the first chamfered ridge portion not being parallel to the second chamfered ridge portion (where 12a and 13b are perpendicular, not parallel), the first

ridge portion and the second ridge portion not crossing each other (where 12a and 13b lie on separate surfaces, thus not crossing each other).

Claim 28:

At least one dielectric resonator including a dielectric block having a generally rectangular parallelepiped shape (where Ishitobi shows a generally rectangular parallel shaped resonator Figs. 1-5, 7, 9, 10 et al.), where three resonant modes of the dielectric block are coupled (0016 – disclosed where coupling coefficients are K_{12} and K_{23} , thus mode 1 is coupled to mode 2 and mode 2 is coupled to mode 3, hence providing coupling of three resonant modes of the dielectric block discussed in the reasons for rejection of claim 1 above), where the dielectric resonator has a first plane formed by chamfering a single one of a ridge portion of the dielectric block (i.e. 12a – Fig. 4) and a second plane formed by chamfering a single one of a second ridge portion of the dielectric block (i.e. 13b – Fig. 4), the first chamfered ridge portion not being parallel to the second chamfered ridge portion (where 12a and 13b are perpendicular, not parallel), the first ridge portion and the second ridge portion not crossing each other (where 12a and 13b lie on separate surfaces, thus not crossing each other discussed in the reasons for rejection of claim 26 above); and a waveguide, where at least one dielectric resonator is located in the waveguide (where the waveguide is inherent by the resonator element used in a filter arrangement, hence waveguide as shown in the filter schematic of Fig. 11 and filter response of Fig.12).

Claim 30:

Where the second type dielectric resonator has a TEM mode and comprises metal (where the TE modes [0008] and TEM modes [0014] are taught by Ishitobi, and where the resonator element is metal [0008], thus all resonator elements of the filter including the second resonator element inherently metal).

Claim 33:

An exciting means as the input terminal and an exciting means as an output terminal (where Ishitobi shows the filter diagram - Fig. 11, filter response Fig. 12, and probes, Figs. 9 and 10 and disclosed by Ishitobi as "magnetic outer joint means" 0018 with respect to the filter shown in Figs. 11 and 12, thus having exciting means as the input terminal and an exciting means as an output terminals).

Claim 34:

Where each of the exciting means comprises a rod-shaped antenna (Figs. 4 and 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitobi.

Claims 5 and 29:

Ishitobi shows the dielectric filter (discussed in the reasons for rejection of claim 28 above).

Ishitobi shows the filter with generic resonator elements and shows individual well-known different resonator configurations and modes (e.g. Figs. 4 – 8 and specifically where Fig. 5 shows the modes in phase and Fig. 7 where the modes are anti-phase) but does not explicitly show the well-known art-recognized equivalent different resonators (e.g. different resonator configurations) in the filter.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the well-known generic resonator filters disclosed by Ishitobi with the well-known art-recognized equivalent different resonators (e.g. different resonator configurations) in the filter. Such a modification would have been a mere substitution of well-known art-recognized equivalent resonator elements in the filter to achieve the desired filter characteristic, further suggested by Ishitobi in that Ishitobi teaches the different resonator elements (e.g. phase and anti-phase resonator elements, further that Ishitobi teaches that if three resonator elements are the same, the resonant modes degenerate and cannot exist -0011), thus suggesting the obviousness of the modification.

Claims 3, 19, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitobi as applied to claims 2 and 28 above, in view of Ando et al. (U.S. Patent No. 5,796,318).

Claim 3:

Ishitobi teaches the dielectric filter disposing two or more of the dielectric resonators in the cut-off waveguide in the reasons for rejection of claim 2 above.

Ishitobi shows the generic filter but does not specifically show the construction of the filter including well-known partitions comprising conductive material between the dielectric resonators.

Ando et al. shows a multiple mode dielectric resonator filter with well-known partitions (30c – best shown in Figs. 1, 2, 5, 7, 8 et al.) comprising conductive material between the dielectric resonators (where the partitions are conductive shields, hence metal, further described by the application of Ag or silver paste – col.4, lines 10-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the generic dielectric filter disclosed by Ishitobi with the well-known partitions comprising conductive material between the dielectric resonators disclosed by Ando et al. Such a modification would have been a mere substitution of well-known art-recognized equivalent filter designs, further suggested to provide well-known electromagnetic coupling (Ando et al. – col. 2, lines 25-50), thus suggesting the obviousness of the modification.

Claim 19:

Characterized in installing another resonator further than the dielectric resonator in the cut-off wave guide (where the second resonator in the filter of Ishitobi and Ando et al. would inherently be placed further, e.g. from either filter end, than the first dielectric resonator).

Claim 31:

A partition comprising a conductive material separating two dielectric resonators in the waveguide (where Ando et al. teaches the metal partitions).

Claims 4, 17, 20, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitobi and Ando et al. as applied to claim 3 above, in view of Hattori et al. (U.S. Patent No. 5,764,115).

Claims 4 and 17:

Ishitobi and Ando et al. teach the dielectric filter in the reasons for rejection of claim 3 above, where Ishitobi shows a metal rod contacting with the cut-off waveguide, one end parallel with a side surface of the dielectric resonator in a position distant by a predetermined amount from the side surface (e.g. where probe 41, best shown in Figs. 4, 9, 10, are parallel and distant to a side surface and inherently positioned at a predetermined amount from the side surface).

Ishitobi and Ando et al. teach the dielectric filter and coupling between resonators but do not show where the coupling between resonators is adjustable.

Hattori et al. shows a similar multi-mode resonator filter with well-known adjustable coupling (coupling bar 3, Figs. 1-4, and 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the dielectric filter disclosed by Ishitobi and Ando et al. with the well-known adjustable coupling disclosed by Hattori et al. Such a modification would have realized the advantageous benefit of providing for a large

coupling coefficient to compensate for the variations in the different filter pieces (col. 2, lines 12-29 of Hattori et al.) thus suggesting the obviousness of the modification.

Claim 20:

Characterized in installing another resonator further than the dielectric resonator in the cut-off wave guide (where the second resonator in the filter of Ishitobi, Ando et al. and Hattori et al. would inherently be placed further, e.g. from either filter end, than the first dielectric resonator).

Claim 32:

A metal rod inserted between two dielectric resonators in the waveguide (where Hattori et al. shows a metal rod, e.g. coupling rod 3, between resonator elements).

Response to Arguments

Applicant's arguments filed by Amendment C (paper no. 13) received August 7, 2002 have been fully considered but they are not persuasive.

II. THE PRIOR ART REJECTION

It is argued that Ishitobi does not couple three modes and that Ishitobi teaches that $K_{31} = 0$. While Ishitobi clearly discloses $K_{31} = 0$, the Examiner maintains that K_1 is coupled to K_2 (e.g. K_{12}) and K_2 is coupled to K_3 (e.g. K_{23}) [0013] thus Ishitobi couples all three resonance modes with K_1 , K_2 , and K_3 all being coupled, albeit notwithstanding the non-coupling of K_{31} . Therefore, the Examiner maintains that the prior art resonator of Ishitobi anticipates the limitations and "provides coupling of three resonant modes of said dielectric block", thus the rejection is maintained.

Allowable Subject Matter

Claims 6 – 14, 16, 21, 23 – 25 are allowed.

Ishitobi shows four chamfered ridges with pairs of ridges parallel but does not show the three ridges not being parallel to each other (claim 6) and three parallel ridges not sharing the same point and including the chamfering ratios (claims 8 and 9), nor would it be obvious to combine any of the prior art to meet each and every limitation of the independent claims, thus independent claims 6, 8, and 9 and the dependent claims therein are found in condition for allowance.

Claims 27, 35, and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 27 and 35:

Ishitobi teaches the mode changes by the different resonator block shapes but does not show the variations of mode by changing the dimensions of the different resonator block shapes (claim 27).

Ishitobi and Ando et al. teach the filter and the addition of Hattori et al. teaches the filter with an adjustable coupling bar but Ishitobi and Ando et al. and Hattori et al. does not teaches the exciting probes, e.g. input/outputs, being adjustable, rather that the coupling bar between the elements is adjustable (claim 35) nor the low dielectric constant supports.

Claim 36:

Claim 36 would be allowable if rewritten to overcome the drawing objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O Takaoka whose telephone number is (703) 305-6242. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dot
November 18, 2002


Robert Pascal
Supervisory Patent Examiner
Technology Center 2800